

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) [[Method]] A method of manufacturing a resonator within a semiconductor device, said semiconductor device comprising a substrate (~~Z_HO~~) with a first (~~XX~~) and a second (~~YY~~) axes which are perpendicular, wherein said method comprises the steps of:

etching a hole (~~TR~~) in the substrate (~~Z_HO~~);

creating a first doping zone (~~Z_DIFF1~~) inside and around the hole (~~TR~~) for defining a first electrode[~~1~~];

partitioning said first electrode into two electrodes (~~ELEC1, ELEC2~~);

applying a delimited oxide deposit (~~Z_OXI~~) inside and around the hole (~~TR~~) according to a specific deposit pattern (~~M_ARBOR~~);

defining a second doping zone (~~Z_DIFF2~~) fully covering the hole (~~TR~~); and

removing the oxide deposit (~~Z_OXI~~) in order to define an element forming the resonator ~~capable of vibrating configured to vibrate~~ between the two electrodes (~~ELEC1, ELEC2~~),
_____ wherein the partition of the two electrodes (~~ELEC1, ELEC2~~) is obtained by implanting a first dopant through a partitioning pattern (~~M_ARBOR~~).

2. (Currently Amended) [[Method]] The method of manufacturing a resonator within a semiconductor device as claimed in claim 1, wherein the implant (~~AR~~) partly covers the hole (~~TR~~) at its bottom and sides as well as the substrate surface adjoining said hole (~~TR~~).

3. (Currently Amended) [[Method]] The method of manufacturing a resonator within a semiconductor device as claimed in claim 1, wherein the first dopant is Argon or Boron.

4. (Currently Amended) [[Method]] The method of manufacturing a resonator within a semiconductor device as claimed in claim 1, wherein said hole (~~TR~~) is a trench or a pore which is substantially perpendicular to the substrate surface (~~Z-HO~~).

5. (Currently Amended) [[Method]] The method of manufacturing a resonator within a semiconductor device as claimed in claim 1, wherein the substrate (~~Z-HO~~) is of a high-ohmic type and the first doping zone (~~Z-DIFF1~~) is of a low-ohmic type.

6. (Currently Amended) [[Method]] The method of manufacturing a resonator within a semiconductor device as claimed in claim 1, wherein the specific deposit pattern (~~M-ONO~~) extends along the second axis (~~YY'~~), the inside of said deposit pattern (~~M-ONO~~) allowing the oxide to be settled inside the entire hole (~~TR~~) and at the substrate surface adjoining said hole (~~TR~~) and beyond.

7. (Currently Amended) [[Method]] The method of manufacturing a resonator within a semiconductor device as claimed in claim 1, wherein the second doping zone (~~Z-DIFF2~~) is obtained by means of a second doping pattern (~~M-PS~~) extending along the first axis (~~XX'~~) of the semiconductor (~~SI~~), the inside of said pattern (~~M-PS~~) allowing a second dopant to be settled totally inside the hole (~~TR~~).

8. (Currently Amended) [[Method]] The method of manufacturing a resonator within a semiconductor device as claimed in claim 7, wherein the inside of said pattern (~~M-PS~~) permits a second dopant to cover totally the oxide deposit adjoining the hole (~~TR~~) and beyond.

9. (Currently Amended) [[Method]] The method of manufacturing a resonator within a semiconductor device as claimed in claim 1, wherein said method comprises a further step of adding first pads (~~CTA~~) along the second axis (~~YY'~~) on each side of the hole (~~TR~~), said pads being in contact with the first doping zone (~~Z-DIFF1~~).

10. (Currently Amended) [[Method]] The method of manufacturing a resonator within a semiconductor device as claimed in claim 1, wherein said method comprises a further

step of adding second pads (~~CTA~~) along the first axis (~~XX~~) on each side of the hole (~~TR~~), said pads being in contact with the second doping zone (~~Z-DIFF2~~).

11. (Currently Amended) [[Method]] The method of manufacturing a resonator within a semiconductor device as claimed in claim 1, wherein said semiconductor device comprises a substrate (~~Z-HO~~) with a first definition zone (~~Z-HL~~) where the resonator is built.